



November 1971

HEALTH PLANNING APPLICATIONS OF OPERATIONS RESEARCH AND SYSTEMS ANALYSIS:

A Selected Bibliography

Thomas M. Dunaye, Dr. P.H.
Associate Professor of Health Administration
Health Planning Program, School of Health
The University of Oklahoma Medical Center
and

Bobbie L. Foote, Ph.D.
Associate Professor of Industrial Engineering
Health Planning Program, School of Health
The University of Oklahoma Medical Center
and

Sue L. Dunaye, M.P.H., Consultant
The University of Oklahoma Medical Center

THE LIBRARY OF THE
NOV 8 1971
UNIVERSITY OF ILLINOIS
AT URBANA CHAMPAIGN

Mrs. Mary Vance, Editor
Post Office Box 229
Monticello, Illinois 61856

HEALTH PLANNING APPLICATIONS OF OPERATIONS
RESEARCH AND SYSTEMS ANALYSIS:
A SELECTED BIBLIOGRAPHY

Prepared by

Thomas M. Dunaye, Dr.P.H.
Associate Professor of Health Administration
Health Planning Program, School of Health
The University of Oklahoma Medical Center

Bobbie L. Foote, Ph.D.
Associate Professor of Industrial Engineering
Health Planning Program, School of Health
The University of Oklahoma Medical Center

Sue L. Dunaye, M.P.H., Consultant
The University of Oklahoma Medical Center

Computer, engineering, and quantitative applications in community health services, although still a relatively recent development, have made an invaluable contribution to this field and promise even greater potential for the future.

The following bibliography of available literature indicates that experience with these tools and techniques has varied widely and grown rapidly with the current state of the art. Its purpose is to offer a means of easily locating relevant material on the subject. While these references are not exhaustive or all-inclusive, they do represent a substantial inventory of existing publications. The authors would recommend, however, that the listings be updated periodically to keep health planners and administrators abreast of new advances.

Digitized by the Internet Archive
in 2010 with funding from
University of Illinois Urbana-Champaign

<http://www.archive.org/details/healthplanningap233duna>

BOOKS

Ackoff, R. L. and Sasiemi. Fundamentals of Operations Research. New York: John Wiley & Sons, 1968.

Blum, H. L. and Associates. Health Planning, 1969. Berkeley, California: Western Regional Office, American Public Health Association, 1969.

Branch, M. C. Planning Aspects and Applications. New York: John Wiley & Sons, 1966.

Bross, I. D. J. Design for Decision. New York: Macmillan Company, 1953.

Burk, E. C. and J. F. Chapman. New Decision-Making Tools for Managers. Cambridge: Harvard University Press, 1963.

Chacko, G. K. Applied Statistics in Decision-Making. New York: American Elsevier Publishing Company, Inc., 1971.

Chacko, G. K. (ed.). The Recognition of Systems in Health Services. Arlington, Virginia: Operations Research Society of America, 1969.

Churchman, C. W., R. L. Ackoff, and E. L. Arnoff. Introduction to Operations Research. New York: John Wiley & Sons, Inc., 1957.

Churchman, C. W. The Systems Approach. New York: Dell Publishing Company, Inc., 1968.

Cleland, D. I. and W. R. King. Systems Analysis and Project Management. New York: McGraw-Hill, 1963.

Davies, J. O. F., et al. Towards a Measure of Medical Care. London: Oxford University Press, 1962.

Drucker, P. F. Managing for Results. New York: Harper and Row, 1964.

Easton, D. A Systems Analysis of Political Life. New York: John Wiley & Sons, Inc., 1965.

Fisher, G. H. Cost Considerations in Systems Analysis. New York: American Elsevier Publishing Company, Inc., 1971.

Flagle, C. D., Huggins, and Roy. Operations Research and Systems Engineering. Baltimore: Johns Hopkins Press, 1960.

Goldman, T. A. (ed.). Cost-Effectiveness Analysis: New Approaches in Decision-Making. New York: Praeger Publishing Company, 1966.

Griffith, J. R., L. E. Weeks, and J. H. Sullivan. The McPherson Experiment. Ann Arbor: University of Michigan Bureau of Hospital Administration, 1969.

Health Program Implementation Through PERT. Berkely, California: Western Regional Office of the American Public Health Association, 1966.

Hillier, F. F. and Lieberman. Introduction to Operations Research. San Francisco: Holden-Day, 1967.

Hitch, C. J. and R. N. McKean. The Economics of Defense in the Nuclear Age. New York: Atheneum, 1965.

Ingbar, M. L. and L. D. Taylor. Hospital Costs in Massachusetts. Cambridge, Massachusetts: Harvard University Press, 1968.

Johnson, R. A., F. E. Kast, and J. Rosenzweig. Theory and Management of Systems. New York: McGraw-Hill, 1963.

Klarman, H. E. Empirical Studies in Health Economics. Baltimore: Johns Hopkins Press, 1970.

Lindberg, D. A. B. The Computer and Medical Care. Springfield, Illinois: Charles C. Thomas, 1968.

Lyden, F. J. and E. G. Miller (eds.). Planning, Programming, Budgeting: A Systems Approach to Management. Chicago: Markham Publishing Company, 1967.

Mainland, D. (ed.). Health Service Research. New York: Milbank Memorial Fund, 1967.

McLoughlin, J. B. Urban and Regional Planning: A Systems Approach. New York: F. A. Praeger, 1969.

Miller, D. W. and M. K. Starr. Executive Decisions and Operations Research. Englewood, New Jersey: Prentice-Hall, 1969.

Miller, D. W. and M. K. Starr. Structure of Human Decisions. Englewood Cliffs, New Jersey: Prentice-Hall, 1967.

Moore, F. J. Development of a Clinical Decision Support System. Yorktown Heights, New York: International Business Machines Corporation, June, 1969.

Novick, D. (ed.). Program Budgeting. Cambridge, Massachusetts: Harvard University Press, 1965.

Rao, C. R. (ed.). Essays on Econometrics and Planning. New York: Permagon Press, 1963.

Rudwick, B. H. Systems Analysis for Effective Planning: Principles and Cases. New York: John Wiley and Sons, Inc., 1969.

Schaller, H. G. (ed.). Public Expenditures Decisions in the Urban Community. Washington: Resources for the Future, 1963.

Schellenberger, R. E. Managerial Analysis. Homewood, Illinois: Richard D. Irwin, Inc., 1969.

Shuckman, A. Scientific Decision Making in Business. New York: Holt, Rinehart, and Winston, 1963.

Simon, H. A. The New Science of Management Decision. New York: Harper, 1960.

Smalley, H. E. and J. R. Freeman. Hospital Industrial Engineering. New York: Reinhold, 1966.

Souder, J. J., et al. Planning for Hospitals. Chicago: American Hospital Association, 1964.

Spencer, M. and L. Siegelman. Managerial Economics: Decision Making and Forward Planning. Homewood, Illinois: Richard D. Irwin, 1964.

Suchman, E. Evaluative Research: Principles and Practice in Public Service and Social Action Programs. New York: Russell Sage Foundation, 1967.

Van Court Hare, Jr. Systems Analysis: A Diagnostic Approach. New York: Harcourt, Brace, and World, Inc., 1967.

Wagner, H. M. Principles of Operations Research. Englewood Cliffs, New Jersey: Prentice-Hall, 1969.

Whitehead, A. N. Science and the Modern World. New York: The New American Library of World Literature, Inc., 1960.

Young, S. Management: A Systems Analysis. Glenview, Illinois: Scott Foresman, 1966.

SCIENTIFIC REPORTS AND TECHNICAL DOCUMENTS

American Rehabilitation Foundation. Information Systems for Comprehensive Health Planning. Minneapolis, Minnesota: Institute for Interdisciplinary Studies, May, 1967.

Anderson, O. W. and J. Kravits. Health Services in the Chicago Area--A Framework for Use of Data. Center for Health Administration Studies, Research Series No. 26. Chicago: The University of Chicago, 1968.

Center for Health Administration Studies. Selected Papers on Health Planning--Its Purpose and Evaluating Outcomes. Health Administration Perspectives No. A8. Chicago: University of Chicago, 1969.

Cherniack, H. D. and J. B. Schneider. A New Approach to the Delineation of Hospital Service Areas. Discussion Paper Series No. 16. Philadelphia: Regional Science Research Institute, 1967.

Coughlin, R. E. "Hospital Complex Analysis: An Approach to Analysis for Planning a Metropolitan System of Service Facilities." Unpublished Ph.D. dissertation, University of Pennsylvania, Philadelphia, 1964.

Delon, G. L. and H. E. Smalley. Quantitative Methods for Evaluating Hospitals Designs. Report NCHR-RD-70-1, April, 1970.

Delon, G. L. "Cost Methodologies in the Pathology Laboratory." Unpublished Ph.D. dissertation, University of Pittsburgh, Pittsburgh, 1970.

Department of H.E.W. Principles for Planning the Future Hospital System. Public Health Service Publication No. 721. Washington: Government Printing Office, 1959.

Dunaye, T. M. "Community Planning Impact on Areawide Systems of Health Facilities and Services." Unpublished Dr.P.H. dissertation, University of California, Los Angeles, 1970.

Gentry, J. T., F. D. Kennedy, and A. H. Packer. The Health Service System. Vol. II of The Development of a Simulation Model of a Community Health Service System. Research Triangle Park: The Institute, 1968.

Gustafson, D. "Comparative Methodologies for Predicting and Explaining Hospital Lengths of Stay." Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor, 1966.

Halpert, H. P., W. J. Horvath, and J. F. Young (eds.). An Administrator's Handbook on the Application of Operations Research to the Management of Mental Health Systems. National Clearinghouse for Mental Health Information, NIMH Publication No. 1003. Washington: Government Printing Office, 1970.

Haussmann, R. K. D. "A Queueing Theory Approach to Measuring Quality of Nursing Care: Application in a Burn Unit." Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor, 1968.

Hedinger, F. R. The Systems Approach to Health Services: A Framework. Health Care Research Series No. 11. Iowa City: University of Iowa, 1968.

International City Managers' Association. Introduction to Systems Analysis. Report No. 298. Washington, D.C.: Management Information Service, 1968.

Kovner, J. "A Production Function for Out-Patient Medical Facilities." Unpublished Dr.P.H. dissertation, University of California, Los Angeles, 1968.

Liebman, J. S. "The Development and Application of a Mathematical Programming Model of Personnel Allocation in an Extended Care Nursing Unit." Unpublished Ph.D. dissertation, Johns Hopkins University, Baltimore, 1971.

Meuhauer, D. "The Impact of Administrative Activities on Hospital Operating Efficiency." Unpublished Ph.D. dissertation, University of Chicago, Chicago, 1970.

National Center for Health Services Research and Development. A Computer Simulation Model for Evaluation of the Health Care Delivery System. Report HSRD-70-15. Rockville, Maryland: The Center, 1970.

National Center for Health Services Research and Development. Proceedings of a Conference on Medical Information Systems, January 28-30, 1970, San Francisco. Rockville, Maryland: The Center, 1970.

National Health Council. Planning for Health. Report of the 1967 National Health Forum, Chicago, Illinois, March 20-22, 1967. New York: The Council, 1967.

Payne, E. E. "Investigation and Development of a Computer-Assisted Planning Model for Community Emergency Care Systems." Unpublished Ph.D. dissertation, University of Oklahoma, Norman, 1970.

Reeves, P. N. "A Study of Adoption of Electronic Data Processing in the Hospital Industry." Unpublished D.B.A. dissertation, The George Washington University, Washington, D.C., 1970.

Schneider, J. B. "Planning the Growth of a Metropolitan System of Public Service Facilities." Unpublished Ph.D. dissertation, University of Pennsylvania, Philadelphia, 1966.

Shonich, W. "An Analysis of Some Aspects of the Stochastic Behavior of the Daily Census in Short-Term General Hospitals." Unpublished Ph.D. dissertation, University of California, Los Angeles, 1967.

Starkweather, D. "Organizational Performance of Different-Sized Hospitals." Unpublished Dr.P.H. dissertation, University of California, Los Angeles, 1968.

Wolfe, H., L. J. Shuman, and C. P. Hardwick. Predictive Hospital Reimbursement and Evaluation. Management Systems and Operations Research Series No. 8. Pittsburgh: University of Pittsburgh, School of Industrial Engineering, June, 1971.

JOURNAL ARTICLES

Akman, A. and J. B. Gordon. "Systems Analysis and Occupational Health," American Journal of Public Health, 60:1749-1759, September, 1970.

Andrew, W. F. "Methods Improvement," Hospitals, 44:31-35, August, 1970.

"Application of Systems Engineering in Nursing," American Journal of Nursing, 69:2155-2160, October, 1969.

Arnold, M. F. "Use of Management Tools in Health Planning," Public Health Reports, 83:820-826, October, 1968.

Baligh, H. H. and D. J. Laughhunn. "An Economic Model of the Hospital," Health Services Research, 4:293-303, Winter, 1969.

Balintfy, J. L. and A. Prekopa. "Nature of Random Variation in the Nutrient Composition of Meals," Health Services Research, 1:148-170, Fall, 1966.

Barnhart, G. R. "Social Design and Operations Research," Public Health Reports, 85:247-250, March, 1970.

Barnoon, S. and H. Wolfe. "Scheduling a Multiple Operating Room System: A Simulation Approach," Health Services Research, 3:272-285, Winter, 1968.

Barry, R. E. "Returns of Scale in the Production of Hospital Services," Health Services Research, 2:123-139, Summer, 1967.

Baruch, J. J. "Generalized Medical Information Facility," Inquiry, 5:17-23, September, 1968.

Bashur, R. L., G. W. Shannon, and C. A. Metzner. "Some Ecological Differentials in the Use of Medical Services," Health Services Research, 6:61-75, Spring, 1971.

Bashur, R. L., G. W. Shannon, and C. A. Metzner. "The Application of Three-Dimensional Models to the Distribution of Medical Care Facilities," Medical Care, 8:395-407, September-October, 1970.

Bennett, A. C. "How Use of Systems Can Assist Manager in Improvement Role," Hospital Topics, 48:36-42, July, 1970.

Bennett, A. C. "Superspecialization: What Can We Do About It?" Hospital Administration, 15:43-57, Spring, 1970.

Berg, R. L., et al. "Bed Utilization Studies for Community Planning," Journal of the American Medical Association, 207:2411-2413, March 31, 1969.

Bitell, J. F. "A Class of Discrete-Time Models for the Study of Hospital Admissions," Operations Research, 17:48-69, January-February, 1969.

Blankenship, D. F. "Data Collection Requirements for Comprehensive Health Planning," Medical Care (Supplement), 8:184-186, July-August, 1970.

Blumberg, M. S. "'DPF Concept' Helps Predict Patient Bed Needs," Modern Hospital, 97:75-81, 170, December, 1961.

Blumberg, M. S. "Systems Analysis and Health Manpower," Journal of the American Medical Association, 201:178-179, September 11, 1967.

Boher, F. and G. O'Brien. "Intersystems Relations and Coordination of Human Service Organization," American Journal of Public Health, 61:130-137, January, 1971.

Branch, M. C. "Planning and Operations Research," Journal of the American Institute of Planners, 23:168-175, 1957.

Brenner, M. H. and E. R. Weinerman. "An Ambulatory Service Data System," American Journal of Public Health, 59:1154-1168, July, 1969.

Buetow, C. P. and D. Gowing. "Guide to Network Planning Technique," Hospital Administration in Canada, 9:26-27, October, 1967.

Butter, I. "Health Manpower Research: A Survey," Inquiry, 4:5-41, December, 1967.

Carlisle, B. "How PERT Simplifies Management of Hospital Programs," Hospitals, 39:61-64, December 16, 1965.

Carr, W. J. and P. J. Feldstein. "The Relationship of Cost to Hospital Size," Inquiry, 6:45-65, June, 1967.

- Cashman, J. V. and C. B. Caliber. "Medigame: A New Consumer Education Tool," Public Health Reports, 83:987-989, December, 1968.
- Gaywood, T. E. "Operations Research as a Management Resource," Hospital Administration, 3:42-49, Spring, 1958.
- Chambers, J. C. and F. Hartley. "Data-Processing and the Local Health Department," American Journal of Public Health, 59:311-314, February, 1969.
- Chambers, J. C., S. K. Mullick, and D. A. Goodman. "Catalytic Agent for Effective Planning," Harvard Business Review, 49:110-119, January-February, 1971.
- Clark, W. E., V. A. Clark, J. J. Souder. "Data for Planning from Health Information System Sources," Inquiry, 5:5-16, September, 1968.
- Collen, M. F., et al. "Dollar Cost Per Positive Test for Automated Multi-Phasic Screening," New England Journal of Medicine, 283:459-463, August 27, 1970.
- Collins, G. "Cost Analysis and Efficiency Measures for Hospitals," Inquiry, 5:50-61, June, 1968.
- Connors, M. "A Stochastic Elective Admissions Scheduling Algorithm," Health Services Research, 5:308-319, Winter, 1970.
- Correa, H. and J. D. Beasley. "Mathematical Models for Decision-Making in Population and Family Planning," American Journal of Public Health, 61:138-151, January, 1971.
- Crystal, R. and A. W. Brewster. "Cost-Benefit and Cost-Effectiveness Analysis in the Health Field," Inquiry, 3:3-13, December, 1966.
- Davidoff, P. and T. A. Reiner. "A Choice Theory of Planning," Journal of the American Institute of Planners, 28:103-115, May, 1962.
- Davis, G. J. and R. Reed, Jr. "Variability Control is the Key to Maximum Operating Room Utilization," Modern Hospital, 102:113-114, April, 1964.
- Davis, R. N. "Evaluation of Maintenance Performance," Hospitals, 44:66-69, June, 1970.
- DeGeyndt, W. "Five Approaches for Assessing the Quality of Care," Hospital Administration, 15:21-42, Spring, 1970.
- Delamar, W. T. "Work Simplification," Hospitals, 44:51-52, July, 1970.

Delon, G. L. and H. E. Smalley. "A Systems Approach to Costing in the Blood Bank," Health Services Research, 4:53-62, Spring, 1969.

Delon, G. L. and H. E. Smalley. "Quantitative Methods for Evaluating Hospital Designs," Health Services Research, 5:187-224, Fall, 1970.

Deniston, O. L., I. M. Rosenstock, and V. A. Getting. "Evaluation of Program Effectiveness," Public Health Reports, 83:323-335, April, 1968.

Deniston, O. L. and I. M. Rosenstock. "Evaluating Health Programs," Public Health Reports, 85:835-840, September, 1970.

Deniston, O. L., I. M. Rosenstock, and V. A. Getting. "Evaluation of Program Efficiency," Public Health Reports, 83:603-610, July, 1968.

Densen, P. M., G. James, and E. Cohart. "Research, Program Planning, and Evaluation," Public Health Reports, 81:49-56, January, 1966.

Derry, J. R., et al. "An Information System for Health Facilities Planning," American Journal of Public Health, 58:1414-1421, August, 1968.

Drosness, D. L., et al. "The Application of Computer Graphics to Patient Origin Study Techniques," Public Health Reports, 80:33-40, January, 1965.

Drui, A. B. "Work Measurement and the Radiologist," Operations Research, 18:1125-1137, November-December, 1970.

Dunaye, T. M. "Community Planning for New Partnerships in Health Administration," American Journal of Public Health, 60:987-995, June, 1970.

Dunn, R. G. "Scheduling Elective Admissions," Health Services Research, 2:181-215, Summer, 1967.

Durham, R. C. "Systems Analysis: Application in the Hospital Laundry," Hospital Topics, 48:39-44, March, 1970.

Earickson, R. and R. L. Morrill. "Locational Efficiency of Chicago Hospitals: An Experimental Model," Health Services Research, 4:128-141, Summer, 1969.

Etzioni, A. "Mixed-Scanning: A 'Third' Approach to Decision-Making," Public Administration Review, 27:385-392, December, 1967.

- Fanshel, S. and J. W. Bush. "A Health-Status Index and Its Application to Health-Services Outcomes," Operations Research, 18:1021-1066, November-December, 1970.
- Feldman, P. "A Proposed Research Program for Hospital-Medical Care," Health Services Research, 2:170-180, Summer, 1967.
- Feldstein, M. S. "An Aggregate Planning Model of the Health Care Sector," Medical Care, 5:369-381, November-December, 1967.
- Feldstein, P. and J. German. "Predicting Hospital Utilization: An Evaluation of Three Approaches," Inquiry, 3:14-36, December, 1966.
- Fetter, R. B. and J. O. Thompson. "Patients' Waiting Time and Doctors' Idle Time in the Outpatient Setting," Health Services Research, 1:66-90, Summer, 1966.
- Field, H. M. and A. Jong. "Cost-Effectiveness of Bussing Pupils to a Dental Clinic," HSMHA Health Reports, 36:222-228, March, 1971.
- Flagle, C. D. and J. P. Young. "Application of OR and Industrial Engineering to Problems of Health Services, Hospitals and Public Health," Journal of Industrial Engineering, November, 1966, pp. 609-614.
- Flagle, C. D. "Communications and Control in Comprehensive Patient Care and Health Planning," New York Academy of Science, Vol. 161, September 30, 1969.
- Flagle, C. D. "Operations Research in the Health Services," Operations Research, 10:591-603, September-October, 1962.
- Flagle, C. D. "The Role of Simulation in the Health Services," American Journal of Public Health, 60:2386-2394, December, 1970.
- Frazier, T. M. "The Questionable Role of Statistics in Comprehensive Health Planning," American Journal of Public Health, 60:1701-1705, September, 1970.
- Frenkel, L. D. "Application of Computers to Diagnostic Medicine," Southern Medical Journal, 62:1143-1148 September, 1969.
- Friedmann, J. "A Conceptual Model for the Analysis of Planning Behavior," Administrative Science Quarterly, 12:225-252, September, 1967.
- Friedman, S. H. "Management Engineering," Hospitals, 45:117-120, April, 1971.

- Gabrielson, I. W. "Relating Health and Census Information for Health Planning," American Journal of Public Health, 59:1169-1176, July, 1969.
- Garfield, S. R. "Delivery of Medical Care," Scientific American, 222:15-23, April, 1970.
- Gendel, R. A. "Purchasing Mathematics," Hospitals, 44:94-98, 116, November 16, 1970.
- Goldman, J., H. A. Knappenberger, and E. W. Moore, Jr. "An Evaluation of Operating Room Scheduling Policies," Hospital Management, 107:40-51, April, 1969.
- Goldman, J., H. A. Knappenberger, and J. C. Eller. "Evaluating Bed Allocation Policy with Computer Simulation," Health Services Research, 3:119-129, Summer, 1968.
- Gorry, G. A. and N. E. Belague. "Automating Judgmental Decision Making for a Serious Medical Problem," Management Science, 17:421-434, April, 1971.
- Greenes, R. A. and V. W. Sidel. "The Use of Computer Mapping in Health Research," Health Services Research, 2:243-259, Fall, 1967.
- Greenhouse, S. H. "The Planning-Programming-Budgeting System: Rationale, Language, and Idea-Relationship," Public Administration Review, December, 1966, pp. 271-277.
- Gue, R. L. "Operations Research in Health and Hospital Administration," Hospital Administration, 10:6-25, Fall, 1965.
- Gupta, I., J. Zoreda, and N. Kramer. "Hospital Manpower Planning by Use of Queueing Theory," Health Services Research, 6:76-82, Spring, 1971.
- Gustave, J. R. et al. "Simulation of a Hematology Department," Health Services Research, 5:25-35, Spring, 1970.
- Handyside, A. J. and D. Morris. "Simulation of Emergency Bed Occupancy," Health Services Research, 2:287-297, Fall-Winter, 1967.
- Hardy, O. B. "Systematic Processes Applied to Health Care Planning," Health Administration, 16:7-24, Winter, 1971.
- Harris, D. H. "Nuring Staffing Requirements," Hospitals, 44:64-70, April, 1970.
- Hefty, T. R. "Returns to Scale in Hospitals: A Critical Review of Recent Research," Health Services Research, 4:267-280, Winter, 1969.

- Herberg, E. N. "Comparative Treatment Technologies and Health Care Patterns in Institutions for Mentally Retarded," American Journal of Public Health, 61:988-999, May, 1971.
- Hess, I. and K. S. Srikantan. "Some Aspects of the Probability Sampling Technique of Controlled Selection," Health Services Research, 1:8-53, Summer, 1966.
- Hodge, M. H., Jr. "Information Technology--A New Resource in the Practice of Medicine," Group Practice, 17:15-23, March, 1968.
- Holder, L. and O. L. Deniston. "A Decision-Making Approach to Comprehensive Health Planning," Public Health Reports, 83:559-598, July, 1968.
- Horvath, W. J. "Need for Estimating the Influence of Technological and Social Changes on Future Health Facility Requirements," Health Services Research, 3:3-9, Spring, 1968.
- Horvath, W. J. "The Systems Approach to the National Health Problem," Management Science, 12:391-395, June, 1966.
- Horvitz, D. G. "Methodological Considerations in Evaluating the Effectiveness of Programs and Benefits," Inquiry, 2:96-104, September, 1965.
- Hsieh, R. K. C. "Evaluation of Formal Communication Systems in a Hospital," Health Services Research, 1:222-235, Winter, 1966.
- Hughes, J. and L. Mann. "Systems and Planning Theory," Journal of the American Institute of Planners, 35:330-333, September, 1969.
- Huntley, R. R. "Programs of the National Center for Health Services Research and Development," Medical Care, 7:86-91, March-April, 1969.
- Hutcheson, B. R. and E. A. Krause. "Systems Analysis and Mental Health Services," Community Mental Health Journal, 5:29-45, 1969.
- Hyman, J. "Empirical Research on the Demand for Health Care," Inquiry, 8:61-71, March, 1971.
- James, C. F. "Engineers and Health Systems," Hospital Tribune, 6:8, April 5, 1971.
- Jeffers, J., M. F. Bognanno, and J. C. Bartlett. "On the Demand Vs. Need for Medical Services and the Concept of 'Shortage'," American Journal of Public Health, 61:46-63, January, 1971.

- Jelinek, R. C. "A Structural Model for the Patient Care Operation," Health Services Research, 2:226-243, Fall, 1967.
- Johnson, W. D. and G. G. Koch. "Analysis of Quantitative Data: Linear Functions," Health Services Research, 5:358-369, Winter, 1970.
- Johnson, W. L. and L. S. Rosenfeld. "Factors Affecting Waiting Time in Ambulatory Care Services," Health Services Research, 3:286-295, Winter, 1968.
- Jydstrup, R. A. and M. J. Gross. "Cost of Information Handling in Hospitals," Health Services Research, 1:235-271, Winter, 1966.
- Kanon, D. and A. Samis. "Systematic Sampling Checks Hospital Activity," Journal of Industrial Engineering, April, 1969, pp. 22-26.
- Kerr, M. and D. J. Trantow. "Defining, Measuring, and Assessing the Quality of Health Services," Public Health Reports, 84:415-424, May, 1969.
- Kildea, J. "OR Scheduling Methods," Hospitals, 44:99-101, November 16, 1970.
- Kilpatrick, K. E. and L. E. Freund. "A Simulation of Tank Oxygen Inventory at a Community General Hospital," Health Services Research, 2:298-305, Fall-Winter, 1967.
- Kissick, W. L. "Planning, Programming and Budgeting in Health," Medical Care, 5:201-220, July-August, 1967.
- Klarman, H. E. "Some Technical Problems in Areawide Planning for Hospital Care," Journal of Chronic Diseases, 17:735-747, September, 1964.
- Kovner, J. W. "Measurement of Outpatient Office Visit Services," Health Services Research, 4:112-127, Summer, 1969.
- Lanphier, T. "Flow Charting Speeds Hospital Work," Journal of Industrial Engineering, November, 1970, pp. 50-53.
- Ledley, R. S. "Computer Aids to Clinical Treatment Evaluation," Operations Research, 15:694-705, July-August, 1967.
- Lincoln, T. L. and R. D. Parker. "Medical Diagnosis Using Bayes Theorem," Health Services Research, 2:34-46, Spring, 1967.

- Lubin, J. W. et al. "Highway Network Minimum Path Selection Applied to Health Facility Planning," Public Health Reports, 80:771-778, September, 1965.
- May, P. "Cost-Effectiveness of Mental Health Care," American Journal of Public Health, 60:2269-2272, December, 1970.
- May, P. "Cost-Efficiency of Mental Health Care," American Journal of Public Health, 61:127-129, January, 1971.
- McCarn, D. B. and D. G. Moriarty. "Computers in Medicine," Hospitals, 45:37-39, January 1, 1971.
- McCartney, R. A., B. McKee and L. D. Cady. "Nurse Staffing Systems," Hospitals, 44:102-105, November 16, 1970.
- McLaughlin, L. "Nursing in Telediagnosis," American Journal of Nursing, 69:1006-1008, May, 1969.
- Merter, W. "PERT and Planning for Health Programs," Public Health Reports, 81:449-454, May, 1966.
- Michael, J., et al. "A Basic Information System for Health Planning," Public Health Reports, 83:21-28, January, 1968.
- Michael, J., et al. "An Approach to Health Planning," Public Health Reports, 82:1063-1070, December, 1967.
- Millendorfer, H. and E. Attinger. "Global Systems Dynamics," Medical Care, 6:467-489, November-December, 1968.
- Monagle, W. J. and T. D. LaSalle. "Computerized Multi-Phasic Screening: More Tests, More Speed--But Not More Cost," Modern Hospital, 113:100-103, November, 1969.
- Moore, F. J. "Defining Aggregations of the Poor for Community Health Center Location," Health Services Research, 4:188-197, Fall, 1969.
- Navarro, V. "A Systems Approach to Health Planning," Health Services Research, 4:96-111, Summer, 1969.
- Navarro, V. "Planning for the Distribution of Personal Health Services," Public Health Reports, 84:573-581, July, 1969.
- Navarro, V., R. Parker, and K. White. "A Stochastic and Deterministic Model of Medical Care Utilization," Health Services Research, 5:342-357, Winter, 1970.
- Navarro, V. "Planning Personal Health Services: A Markovian Model," Medical Care, 7:242-249, May-June, 1969.
- Navarro, V. "Systems Approach to Health Planning," Health Services Research, 4:96-111, Summer, 1969.

Newell, D. J. "Problems in Estimating the Demand for Hospital Beds," Journal of Chronic Diseases, 17:749-759, September, 1964.

Noble, J. H. "Designing Information Systems for Comprehensive Health Planning," Inquiry, 7:34-40, December, 1970.

O'Connell, B. and A. McFarlane. "A Medical Care Information System: An Approach to the Computerization of Ambulatory Patient Records," Medical Care, 8:82-87, January-February, 1970.

Packer, A. H. and G. D. Shellard. "Measures of Health-System Effectiveness," Operations Research, 18:1067-1070, November-December, 1970.

Packer, A. H. "Applying Cost-Effectiveness Concepts of the Community Health System," Operations Research, 16:227-253, May-April, 1968.

Palumbo, D. J., et al. "A Systems Analysis of Local Public Health Departments," American Journal of Public Health, 59:673-679, April, 1969.

Patterson, P. and A. Bergman. "Time-Motion Study of Six Pediatric Office Assistants," New England Journal of Medicine, 281:771-774, October 2, 1969.

Pauly, M. V. "A Measure of the Welfare Cost of Health Insurance," Health Services Research, 4:281-292, Winter, 1969.

Pegels, C. C. and A. E. Jelmert. "An Evaluation of Blood-Inventory Policies: A Markov Chain Application," Operation Research, 18:1087-1098, November-December, 1970.

Peterson, O. L. "Information Needs for Regional Planning," Medical Care (Supplement), 8:187-198, July-August, 1970.

Reinke, W. A. and T. D. Baker. "Measuring Effects of Demographic Variables on Health Services Utilization," Health Services Research, 2:61-76, Spring, 1967.

Reinke, W. A. "The Role of Operations Research in Population Planning," Operations Research, 13:1099-1111, November-December, 1970.

Ro, K. K. and R. Auster. "An Output Approach to Incentive Reimbursement for Hospitals," Health Services Research, 4:177-187, Fall, 1969.

Robinson, G. H., P. Wing, and L. E. Davis. "Computer Simulation of Hospital Patient Scheduling Systems," Health Services Research, 3:130-141, Summer, 1968.

- Roth, G. J., et al. "Simulation of a Hematology Department," Health Services Research, 5:25-36, Spring, 1970.
- Sanazaro, P. J. "Health Services Research and Development," Health Services Research, 5:7-11, Spring, 1970.
- Sanazaro, P. J. "The Evaluation of Medical Care Under Public Law 89-239," Medical Care, 5:162-168, May-June, 1967.
- Savas, E. S. "Simulation and Cost Effectiveness Analysis of New York's Emergency Ambulance Service," Management Science, 15:608-627, August, 1969.
- Scheafman, I. H. "Health Systems Research to Deliver Comprehensive Services to Indians," Public Health Reports, 84:697-704, August, 1969.
- Schneider, J. B. "A New Approach to Areawide Planning of Metropolitan Hospital Systems," Hospitals, 42:79-83, April 16, 1968.
- Schneider, J. B. "Measuring, Evaluating and Redesigning Hospital-Physician-Patient Spatial Relationships in Metropolitan Areas," Inquiry, 5:24-43, June, 1968.
- Schneider, J. B. "Measuring Locational Efficiency of the Urban Hospital," Health Services Research, 2:154-169, Summer, 1967.
- Schoenfeld, R. L. "The Digital Computer and Public Health," Archives of Environmental Health, 14:327-332, February, 1967.
- Sherman, S. R., et al. "Computer Intervention with People, Patients, and Physicians," Medical Care, 8:276-286, July-August, 1970.
- Smith, W. "Cost-Effectiveness and Cost-Benefit Analyses for Public Health Programs," Public Health Reports, 83:899-906, November, 1968.
- Soriano, A. "Comparison of Two Scheduling Systems," Operations Research, 14:388-397, May-June, 1966.
- Soulder, J. "Computers Can Bring a New Rationality into Hospital Design," Modern Hospital, 110:80-86, March, 1968.
- Sparer, G. and A. Alderman. "Data Needs for Planning Neighborhood Health Centers," American Journal of Public Health, 61:796-806, April, 1971.
- Spindler, A. "Social and Rehabilitation Services: A Challenge to Operations Research," Operations Research, 18:1112-1124, November-December, 1970.

- Sposato, D. P. and A. H. Spinner. "Forecasting by a Modified Exponential Smoothing Method," Health Services Research, 5:141-147, Summer, 1970.
- Sprague, G. R. and M. E. Ludwig. "Hospital Pharmacy Systems," Hospitals, 44:56-63, October, 1970.
- Starkweather, D. B. "Hospital Size, Complexity and Formalization," Health Services Research, 5:330-341, Winter, 1970.
- Stinson, D. H. "Utility Measurement in Public Health Decision Making," Management Science, 16:17-30, October, 1969.
- Swartzman, G. "The Patient Arrival Process in Hospitals: Statistical Analysis," Health Services Research, 5:320-329, Winter, 1970.
- "Symposium on Medical Care Research," Journal of Chronic Diseases, 17:725-884, September, 1964. (Entire Issue)
- "Symposium on PPBS Reexamined: Program Budgeting Issue," Public Administration Review, 29:111-236, March-April, 1969. (Entire Issue)
- Thompson, J. D. and R. B. Fetter. "Economics of Occupancy with Varying Mixes of Private and Other Patient Accommodations: A Simulation," Health Services Research, 4:42-52, Spring, 1969.
- Thompson, J. D. and R. B. Fetter. "Patient Waiting Time and Doctors' Idle Time in the Outpatient Setting," Health Services Research, 1:66-90, Summer, 1966.
- Thompson, J. D., et al. "How Queueing Theory Works for Hospitals," Modern Hospital, 94:75-78, March, 1960.
- Wachs, M. W. "Planning-Programming-Budgeting and Management Information Systems for Mental Health," American Journal of Public Health, 59:261-266, February, 1969.
- Walters, R. F. and O. E. Bunch. "Utilization of Provisional Discharge Diagnoses to Enhance Patient Traffic-Pattern Studies," Medical Care, 7:313-326, July-August, 1969.
- Weckworth, V. E. "Determining Bed Needs from Occupancy and Census Figures," Hospitals, 40:52-54, January 1, 1966.
- Weinerman, E. R. "Research on Comparative Health Service Systems," Medical Care, 9:272-290, May-June, 1970.
- Weiss, J. and M. Greenlick. "Class Effect on Distant Contacts," Medical Care, 8:456-462, November-December, 1970.

Wheaton, W. L. "Operations Research for Metropolitan Planning," Journal of the American Institute of Planners, 29:250-258, November, 1963.

White, K. L. and J. H. Murnaghan. "Health Services Planning: Models and Means," Health Services Research, 5:304-307, Winter, 1970.

White, K. L. "Improved Medical Care Statistics and the Health Services System," Public Health Reports, 82:847-854, October, 1967.

White, K. L. "Research in Medical Care and Health Services Systems," Medical Care, 6:95-100, March-April, 1968.

Wilson, H. H. and M. R. Schulmeister. "Medical Systems Engineering," Inquiry, 5:35-41, September, 1968.

Wilson, V. E. "Rural Health Care Systems," Journal of the American Medical Association, 216:1623-1626, June 7, 1971.

Wirick, G. C. "A Multiple Equation Model of Demand for Health Care," Health Services Research, 1:301-347, Winter, 1966.

Young, J. P. "A Conceptual Framework for Hospital Administrative Decision Systems," Health Services Research, Summer, 1968.

Young, J. P. "Administrative Control of Multiple-Channel Queueing Systems with Parallel Input Streams," Operations Research, 14:145-156, January-February, 1966.

Zemach, R. "A Model of Health-Service Utilization and Resource Allocation," Operations Research, 18:1071-1086, November-December, 1970.

BIBLIOGRAPHIES

Altman, I., A. J. Anderson, and K. Barker. Methodology in Evaluating the Quality of Medical Care: An Annotated Selected Bibliography, 1955-1968. Pittsburgh: University Press, 1969.

Blackman, A. Comprehensive Health Planning: A Bibliography of Bibliographies. Washington, D.C.: Association of University Programs in Hospital Administration, 1970.

Council of Planning Librarians. Monticello, Illinois: The Council. The following Exchange Bibliographies:

Corey, K. and H. Stafford. Planning for Locational Change in the Delivery of Medical Care: A Selected Bibliography, No. 100, 1969.

Dunaye, T. M. Health Planning: A Bibliography of Basic Readings, No. 168, January, 1971.

Kraemer, K. L. The Systems Approach in Urban Administration--Planning, Management and Operations, No. 49, 1968.

Detloff, V., D. L. Drosness and N. Ribak. Utilization of Health Facilities and Services, 1950-63: An Annotated Selected Bibliography. Sacramento: California State Department of Public Health, December, 1964.

Rand Corporation. Systems Analysis--A Bibliography of Selected Rand Publications. Santa Monica, California: The Corporation, November, 1967. (Contains abstracts of 247 unclassified publications selected from 1500 RAND studies dealing with various aspects of systems analysis and operational research).

Research Triangle Institute. The Development of a Simulation Model of a Community Health Service System: General and Annotated Bibliography, Vol. IV. Research Triangle Park, North Carolina: The Institute, 1968.

Williamson, J. W. Health Services Research Bibliography. National Clearinghouse for Health Research and Development. Baltimore: Johns Hopkins University, 1970.

COUNCIL OF PLANNING LIBRARIANS

Exchange Bibliography #233

HEALTH PLANNING APPLICATIONS OF OPERATIONS RESEARCH AND
SYSTEMS ANALYSIS

Additional copies available from:

Council of Planning Librarians
Post Office Box 229
Monticello, Illinois, 61856

for \$2.00.



UNIVERSITY OF ILLINOIS-URBANA
016.7114C73E C001
EXCHANGE BIBLIOGRAPHY URBANA, ILL
232-239 1971



3 0112 029108997